

Dsg3 Cas9-KO Strategy

Designer: Xueting Zhang

Project Overview

Project Name

Dsg3

Project type

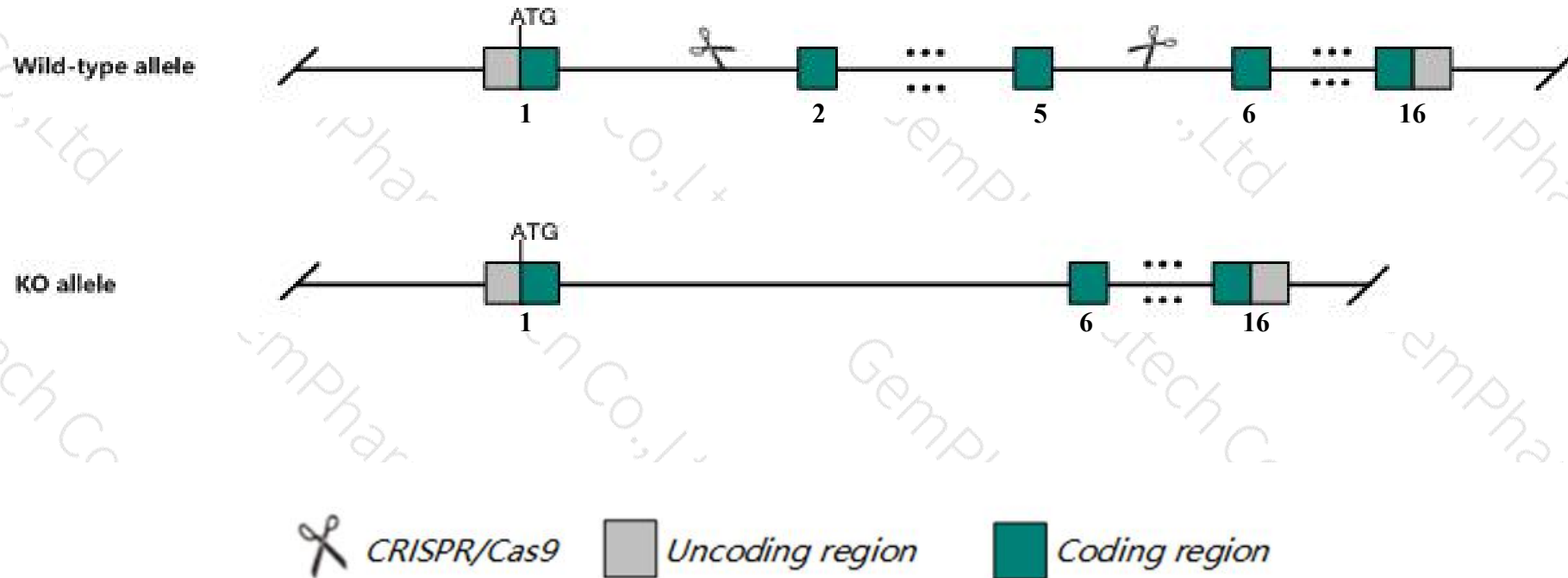
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dsg3* gene. The schematic diagram is as follows:



- The *Dsg3* gene has 2 transcripts. According to the structure of *Dsg3* gene, exon2-exon5 of *Dsg3-201* (ENSMUST00000070892.7) transcript is recommended as the knockout region. The region contains 469bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dsg3* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Homozygous mutants display runting from decreased food intake due to oropharyngeal epithelial lesions, blisters around snout and eyes, hair loss by weaning, and hair regrowth with bald patches throughout life.
- The *Dsg3* gene is located on the Chr18. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Dsg3 desmoglein 3 [Mus musculus (house mouse)]

Gene ID: 13512, updated on 31-Jan-2019

Summary



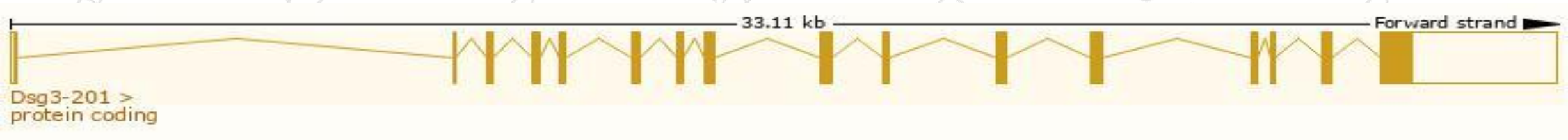
| | |
|---------------------------|---|
| Official Symbol | Dsg3 provided by MGI |
| Official Full Name | desmoglein 3 provided by MGI |
| Primary source | MGI:MGI:99499 |
| See related | Ensembl:ENSMUSG00000056632 |
| Gene type | protein coding |
| RefSeq status | REVIEWED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | bal |
| Summary | This gene encodes a member of the cadherin family of proteins that forms an integral transmembrane component of desmosomes, the multiprotein complexes involved in cell adhesion, organization of the cytoskeleton, cell sorting and cell signaling. The encoded preproprotein undergoes proteolytic processing to generate a mature, functional protein. Mice lacking the encoded protein exhibit loss of keratinocyte cell adhesion resulting in a phenotype that resembles that of patients with pemphigus vulgaris. This gene is located in a cluster of desmosomal cadherin genes on chromosome 18. [provided by RefSeq, Feb 2016] |
| Expression | Biased expression in stomach adult (RPKM 2.1), lung adult (RPKM 1.0) and 4 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

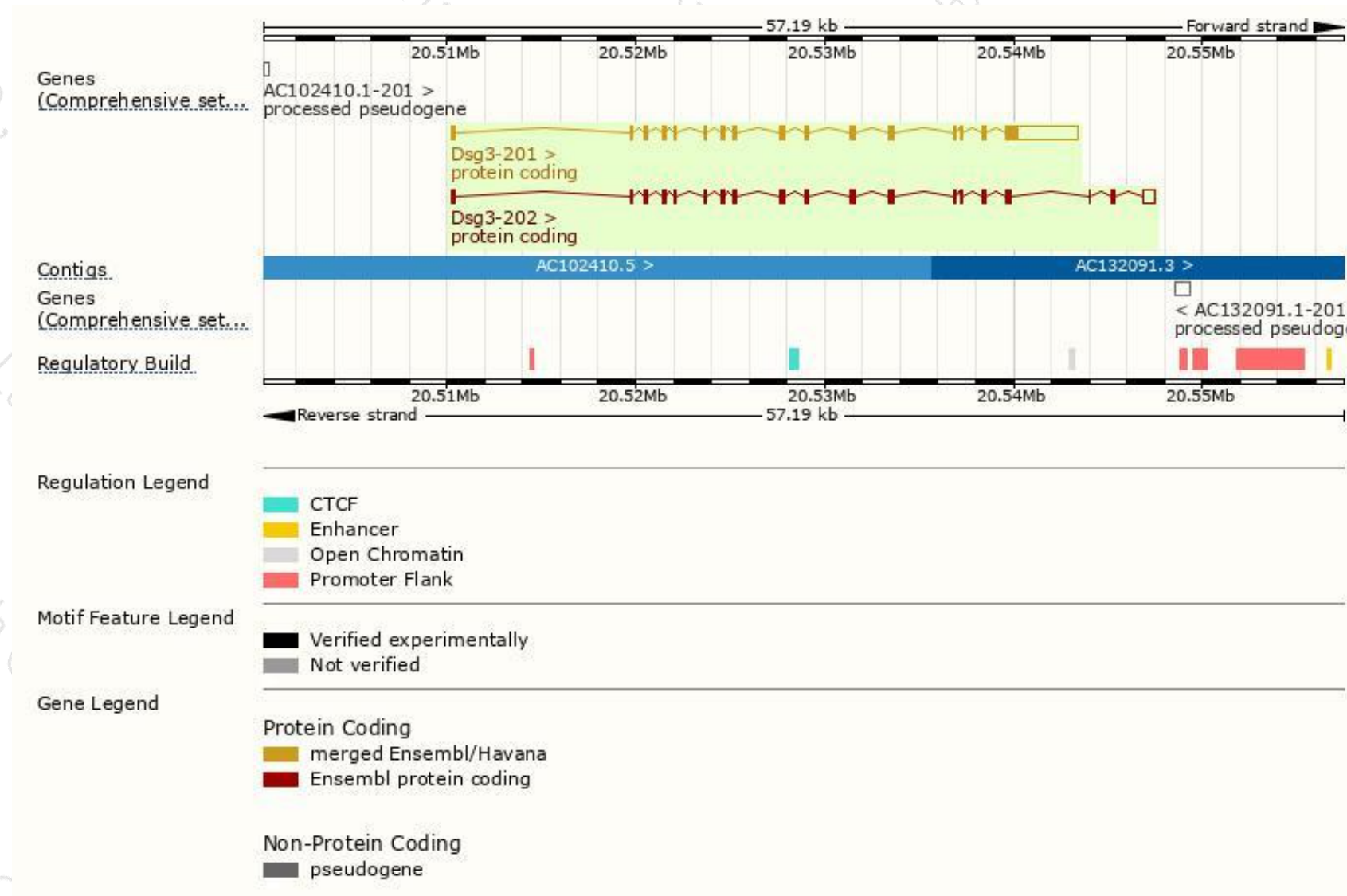
The gene has 2 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|----------|--------------------------------------|------|-----------------------|----------------|---------------------------|------------------------|-------------------------------|
| Dsg3-201 | ENSMUST00000070892.7 | 6212 | 993aa | Protein coding | CCDS29083 | Q3UFC6 | TSL:1 GENCODE basic APPRIS P2 |
| Dsg3-202 | ENSMUST00000234945.1 | 3482 | 929aa | Protein coding | - | - | GENCODE basic APPRIS ALT2 |

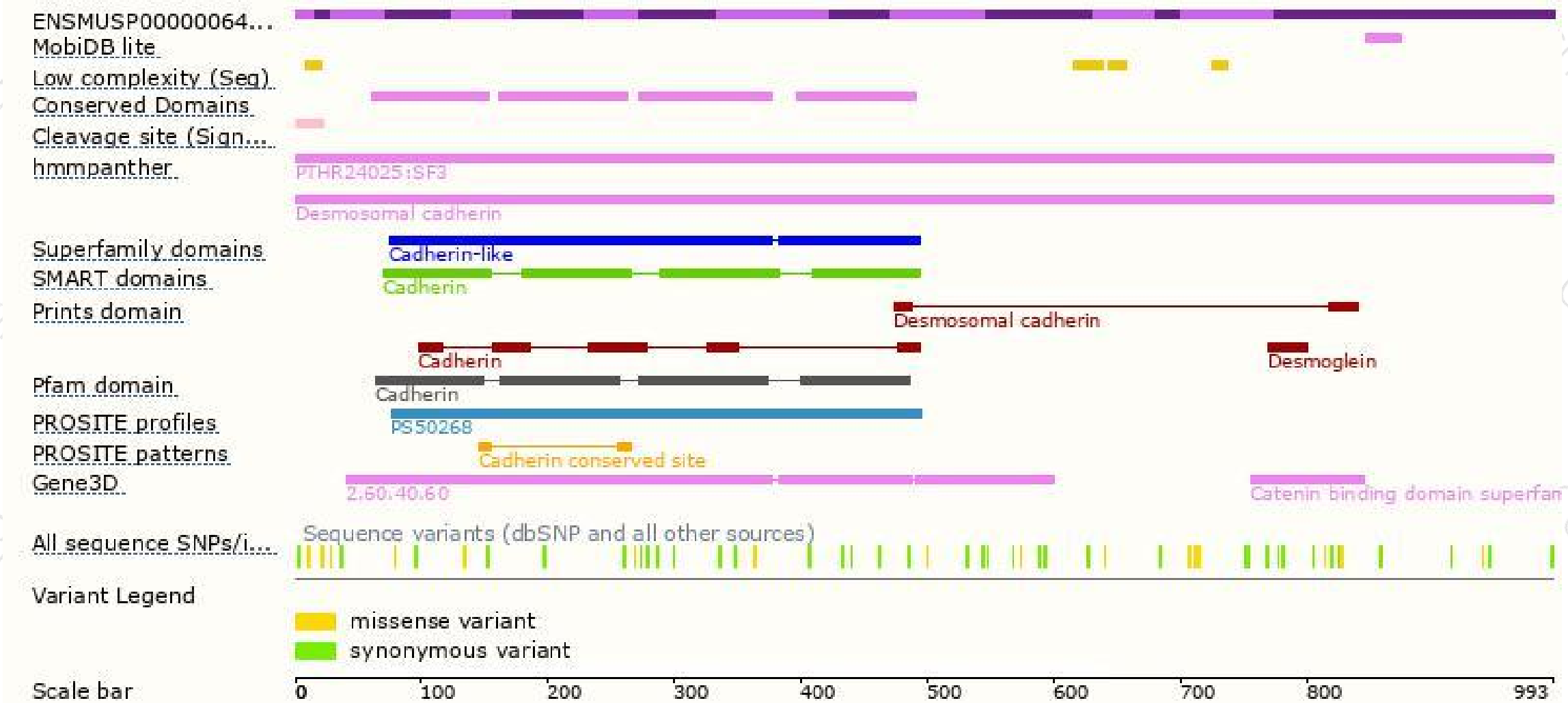
The strategy is based on the design of *Dsg3-201* transcript,The transcription is shown below



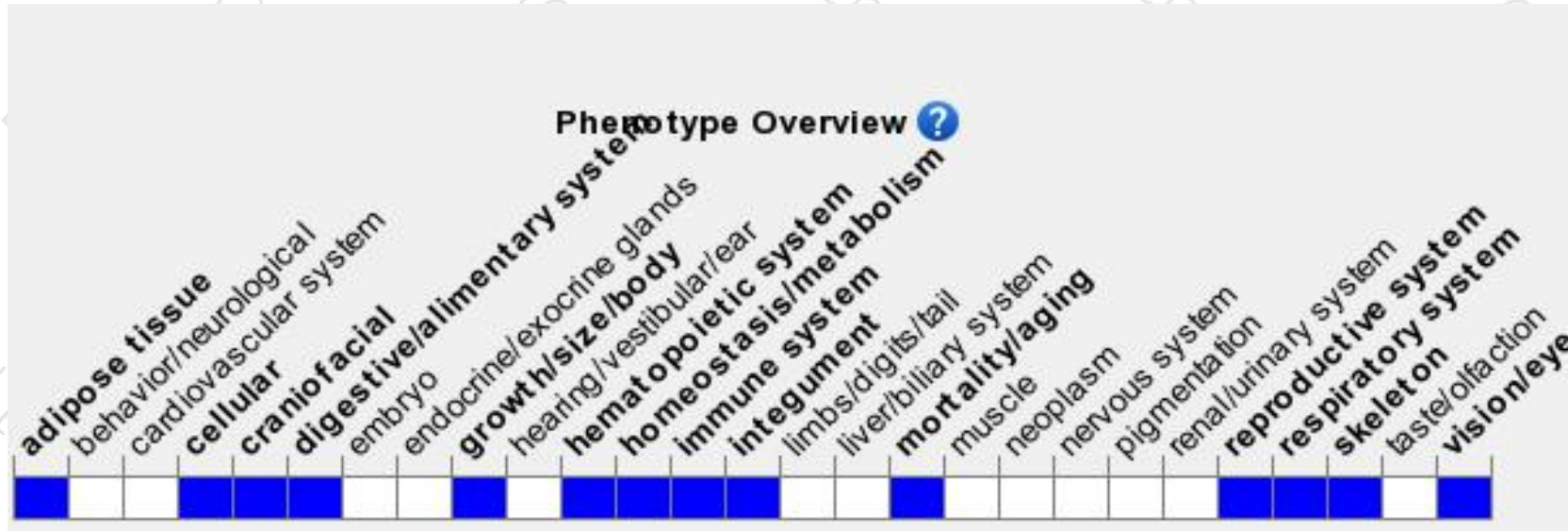
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Homozygous mutants display runting from decreased food intake due to oropharyngeal epithelial lesions, blisters around snout and eyes, hair loss by weaning, and hair regrowth with bald patches throughout life.

If you have any questions, you are welcome to inquire.

Tel: 400-9660890

